LEO J. HICKEY

1978-A

UNITED STATES
DEPARTMENT OF THE INTERIOR

DI-6

APPROVED FEBRUARY 1941

HI = 5.5' or 1.7 M.

6/15/78

781 Woodbridge C/AY Mbr of RARITAN (Eoc. Eminn.Van (middle?)

W/ Arnie Powell & Gil Brenner:

30-40 INTERbedded sand & C/AY w/ Sil & Fe_2O_3 cem ss. layers marine fossils.

5' SS & C/. CONT Abd CArb. wood.

20' Dark grey C/AY, Wh. at Top

Fossils at top of Lowest C/AY

SABITSKY - Field Trips in NJ (P)

Pet Explor Soc of NY
PO Box 3443 G.C. STA.
NY, N.Y. 10017
Yr. membership
Start of
Start of $5.00

Owens, Gill.

Subitzky 1969 Geol of Sel Areas of NJ & Cent.

Field Assistants 7-9/78
Dixie Ann Hambrick
Ann Powell

July 6, 1978

787 Center N line Sec 11
T 20 N R 36 E
Valley Co.
Garfield Co., Mont.

STARTED IN TULLOCK Mbr
abt 15' below ☰ COAL

Thinly bedded Brownish
yellow SS w Shale blebs
1 lgn (?) w root shale

~~Ter - 1 SST~~
BENTONITIC SLTST, med grey
popcorn crust
Ferruginous orange TAN wk
SS 15' Thick above
☰ lgn. Some x bedded
Indurated ledges

PLOT 11 PIX. 1 ☰ lgn SS above
~~TA~~ Thin bedded SS below

Detached wood chips like
bentonitic SLTST below
1 lgn

Y LIGN. IN NE¼ NE¼ Sec 11
Above 2nd yell. brown ferrug.
SLTST
PLANT STEM fragments in PAPER SH.

782 Cont'd

Zip. Abt 4' Shale

Between B & Y

10' SS: Abt 5' Grey X Lam Vfg
Sltst, bottom 1 Mbrt SS. Some
Wvy Lam upward fining
Some Ammonite Fgt Fragments
and pyr. Becomes Lam SS
4' Ligh
2' Sh. Rusty Sh and Sltst
Yellow X Lam Shale
12' SS Vfg SS Some Thin
Limonite beds & clay pebble stained
balls
40' SS Trans To Grey X Lam. SS
as below. X Lgn.

SS at top of X Lignite
3 ft. above floor of
bluff

(782 X) Center NE¼ NW¼ Sec 11
Cercidophyllum sp.
Platanus sp.
Thin bedded Vfg SS
Calc buff wh

PX 2 Picture of X Lignite
w/ x bedded yellow buff
Sand above.

July 6, 1978

783 Center N 1/2 SW 1/4, NW 1/4
Sec 12 T 17 S

W ignite IN Two beds
each 3' Thick Sep. by 10'
Silt brownish buff Sh.
Above lignite is
[redacted] W/ clay grains
To coarse
with grey w/ clay lens
Px-2
Px-3
coal Co. 5
collected

-48" BISCUIT BRICK

[illegible] SERIES SEC. 1B

TOWN HOUSE.

[illegible] of Architectural
Brick Dairy of Suburban [illegible]
[illegible] with 10-12' of
solid [illegible] Cobo [illegible]
[illegible]

[illegible] Consists of clay
utility clays.
Thruppes and other [illegible]
[illegible], consisting [illegible]
[illegible] in clay 4-3'
above [illegible]

[illegible] clays [illegible] YR 8/6
[illegible] 5Y 5/2 of clay
to 10YR 5/4 at top.

FRS Triceratops Loc
Center NW 1/4 SW 1/4 Sec 13

Hell Creek Fm

Site in a med. lt. grey ss.
8-12' below Triceratops
site

Sl irreg med to fine
grained w/ sta SIlst blebs

Zone app 200' below top
Hell Creek Fm

~~SS has~~ is
ss [illegible] the base of
which is [illegible]

Dino ~~zone~~

Rusty ferruginous [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

Bedding not as well defined
as the Tullock. Cross-bedding

PLANTS.

SANDY MATRIX.

METHSEQUOIA CUNEATA — PARATAXODIUM

aff. Rhamnus salicifolius Lesq.

aff. Cercidiphyllum elliptica

Rhamnophyllous leaf aff

"Ficus Texselata" Lesq.

cf. "VITIS" SLANTONII

Indet leaf w/ PLATANOID Teeth

"CELASTRUS" LARRINENSIS Ward.

Sequoia langsdorfii

Platanus cf. reynoldsii

July 7, 1878

766

Amia vertebrae
Crocodile femur
Lepidosteus.

7/8/78

787 SE¼, Sw¼ NW¼ Sec 13

2802

3'

3'

3190

July 8, 1976

788

Tullock Mbr. below Garbani Channel
SW1/4, SE1/4, NE1/4 Sec 13., T. 20N
R. 36E., GARFIELD CO., MONT.

40

X

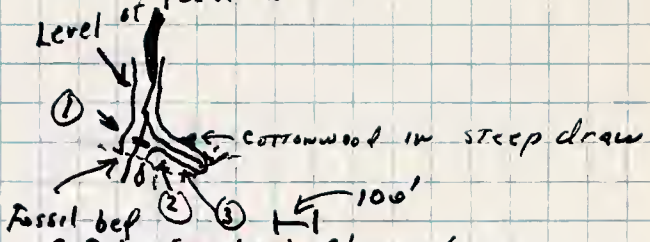
Cercidiphyllum (Broad form)
PLATANUS reynoldsii
poss. Eucommia leaf
ANEMIA

SAME as second floral zone
IN Bighorn BASIN

-68 Biscuit Springs

Cercidiphyllum cf C. ellipticum
Onoclea hesperia Brown
Cf. Woodwardia arctica (Heer) Br.
Platanus reynoldsii Newberry
Glyptostrobus nordenskioldii (Heer) Na.
aff. Trochodendroides Nebrascensis
(in Oannian of Siberia)
Eucommia leaves. & seeds

788 CONTINUED

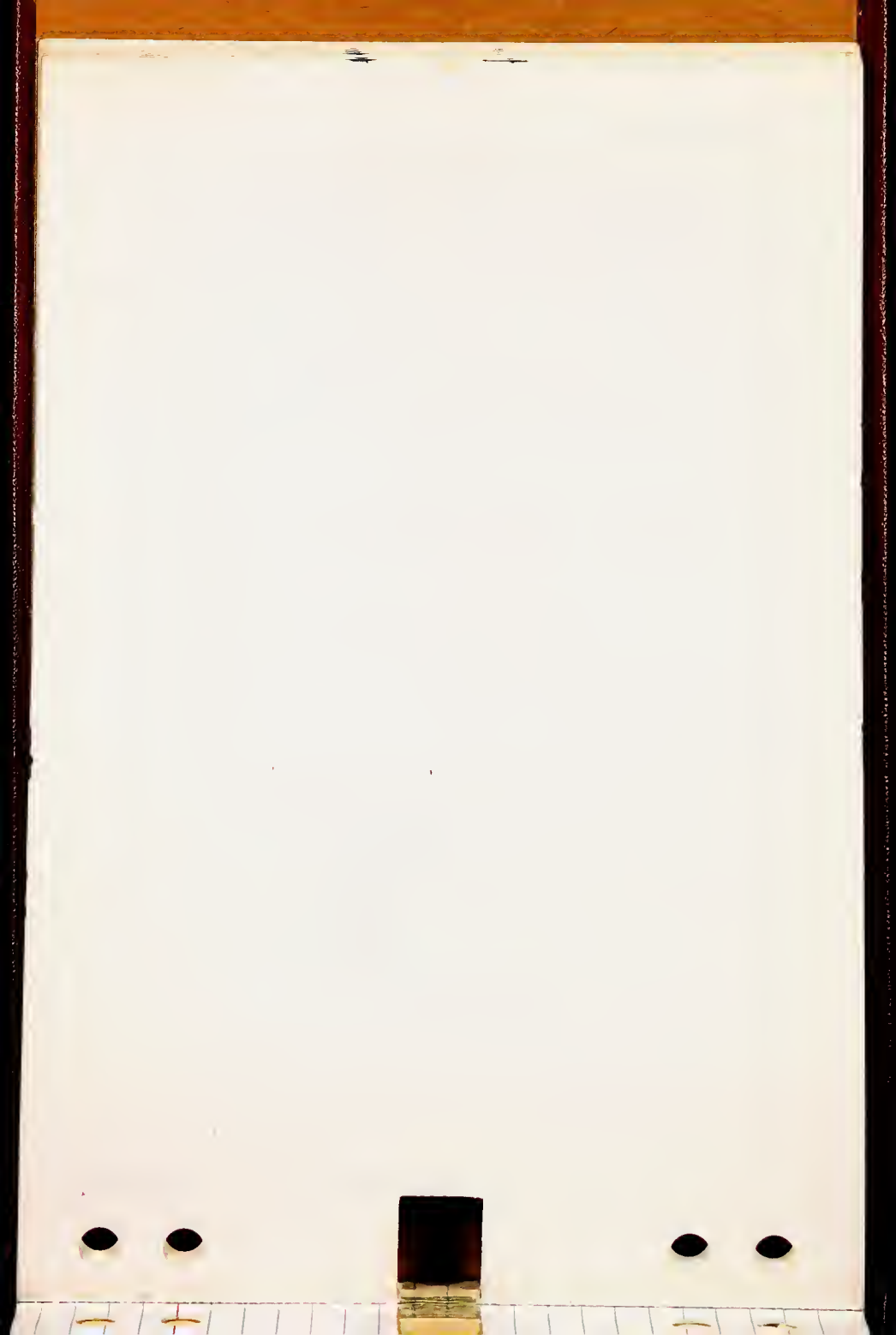


Clay ironstone 2' thick grading upward into thin bedded buff marly ss. Unit cut laterally by Garbani channel.

Plant abundance varies markedly over the outcrop

1. Glyptostrobus
2. Cercidiphyllum + Platanus reynoldsii
3. Site where Eucommia seeds were found.

Tentatively fossil leaf bed 40' above the X coal + 8' above the Biscuit sand.
Mammal loc
20 below the X in Archibald sec. S 14



789 GAMBANI QUAMAY SITE
IN GAMBANI CHANNEL.
@ CENTER N. LINE NE 1/4
SEC. 12, T20 N, R. 36 E.

NUMEROUS VERTEBRATE BONE
FRAGS. + Charred WOOD FRAGS
W/ Lignitized Wood.

Channel CUTS Below X at
This POINT.

July 9, 1978

7815 ... of W. Clemens

Center NW 1/4, NW 1/4 sec 6, T. 20 N R. 37 E., GARFIELD CO., MONT.

Bedding NOT well ——————— defined.

7810

INTERMEDIAT 2

7810 NW 1/4 SE 1/4, NW 1/4 sec 6, T 20 N, R. 37 E. GARFIELD CO. MONT. (see Archibald section 58 p 45

7810 TRAPA MICROPHYLLA

i.e. NW, SE, NW, Sec. 6
T. 20 N, R 37 E.

d1
Cercophyllum ellipticum Zype

1 1/2' below Base of Z

Z

apparent Pebeya sp. in a SS

← Humate impregnation

7811

Cercidiphyllum ellipticum Type
Platanus rexnoldsii

7811a Debeya sp. !

restricted to First floral zone
in BHB Paleocene

7866 Silver Tip Coulee

7867 Jamieson.

7868 = 7659a Ledbetter Loc near Elk Basin 8/11

7869 Grimy Gulch 8/14-15

7870 Lower locality at Silver Tip a mile ± Dixie 8/16/78 Worked out

7871 Scott Henry Loc. 8/17-18 Lower Cambrian Elk Basin Sec 22, T57, R101 W

7872 Upper loc. at Badger Basin Early Cambrian on Z. Tp. Clark Q. sec. 9, T57N R101W = 7627 8/19 45.85' above T of hill

7873 Lower loc. at Badger Basin 61.1' above T of hill had cattle 8/19

7874 Silver Tip locality 30' above 7866 just below a massive ledge forming SS. Carrol. & Platanus 8/19

7875. Silver Tip & 100 yards E S of 7861 Millerina and strat 20' higher than 7860 in fissile shale. 8/19

7868 = 7659 a Dubuya site
Ute Basin Ruin

7869 - Spring Gulch

7870 - Salvia Tipi at base of section
7166 b

7871 South Ridge ?

7872 "Directly S of 7871 ?

7873 [illegible] 7871 ?

7874 40' above 7866 site
Salvia Tipi

7875 40' above 100' S of 7866 site
Salvia Tipi Dry Drainage

7876 Salvia Tipi

(7659a) 7868 - Elk Basin, Scorpion Hollow,
Debeya locality
Elk Basin Quad, Sec 1, T 57N R 100W
Puercian

7869 - Grimy Gulch - 50 m above base
of the Paleocene
GARLAND QUAD,
Puercian - Dragonian?

7870 Lower Silver Tip ~~Coulee~~ Locality

Tiffanian?

7871 - Bay Sand Coulee, Scott Wing Locality
(7834) CLARK QUAD Sec. 22 T57N R101W
Phil Gingerich - Vertebrate Site
l. Clarkforkian

(7872 Badger Basin Upper
(7627?) 45.85 below top of hill
CLARK QUAD Sec. 7, T 57N, R 101W

7873 Badger Basin Lower
(7627?) 61.1 below top. / w/cuticle

7874 DIXIE WEST

30' above 7866, in siltstone below massive ledge forming sandstone

7875 DIXIE SOUTH

100 yds. south of 7866

stratigraphically 20' higher than 7866

fossil shale

July 9, 1982

P817 Hell Hollow

Center, W Bdy SW 1/4, NE 1/4, Sec 36, T 21 N, R 35 E, GRAFFIELD CO., MONT.

NE 1/4, NW 1/4 Sec 36 T 21 N, R 35 E, GARFIELD CO. MONT.
SW side of Small Coulee

- loc.

Ameso neuron or. Typha

NUT.

Phyllites colubrinoides Dorf.

SAME leAga loc as 7813 NE side of Small COULEE

10-28-B

7813

AMESONEURON OR TYPHA FRAGMENT
Platanus reynoldsii
Cercidiphyllum cf ellipticum
Nut
Phyllites cobrinoides Dorf

1814. Paranymphaea crassifolia !

Restricted to First floral zone in NHB.

7814 b Same loc. as 7814 but 11' above the upper Z

Onoclea hesperia in clay iron stoned cones.

7014b. Onoclea hesperia

7815 Sec after 789.

Center ~~NE1/4~~ S1/2, NE 1/4, SW 1/4, Sec 2
T 21 N, R 24 E., GARFIELD Co

~~7815~~

7816 Credneria or Platanus reynoldsii
Cornus nebrascensis
Paranymphaea cordatus
Corylus sp.
Cissus marginatus
Viburnum cupanoides precursor.

others

Flora has a marked K aspect
Cercidiphyllium ellipticum type
Vitis stantonii (K only)
Rhamnus cleburnii

42 E GARFIELD CO.
MONT (WILD HORSE BASIN)
23½" FEET above base of
SS.91 in SITE

Should be looked at carefully.

Paranymphaea CRASSifolia

7817

Thujites interruptus
Probable Eucommia leaves
Glyptostrobus

July 11, 1978

7818 TULLOCK mbr
NEAR C, NE 1/4, SW 1/4 SEC 18
T 20 N, R 37 E, GARFIELD CO., MONT.
Ferruginous ss. Above x + below w
Possible lateral EXTENTION of GARBANI Channel,

Possibly 20' below w lignite on level shot TO hill above pond.

A 2nd Floral ~~Bo~~ zone assemblage w/ some of the same elements as at 7817

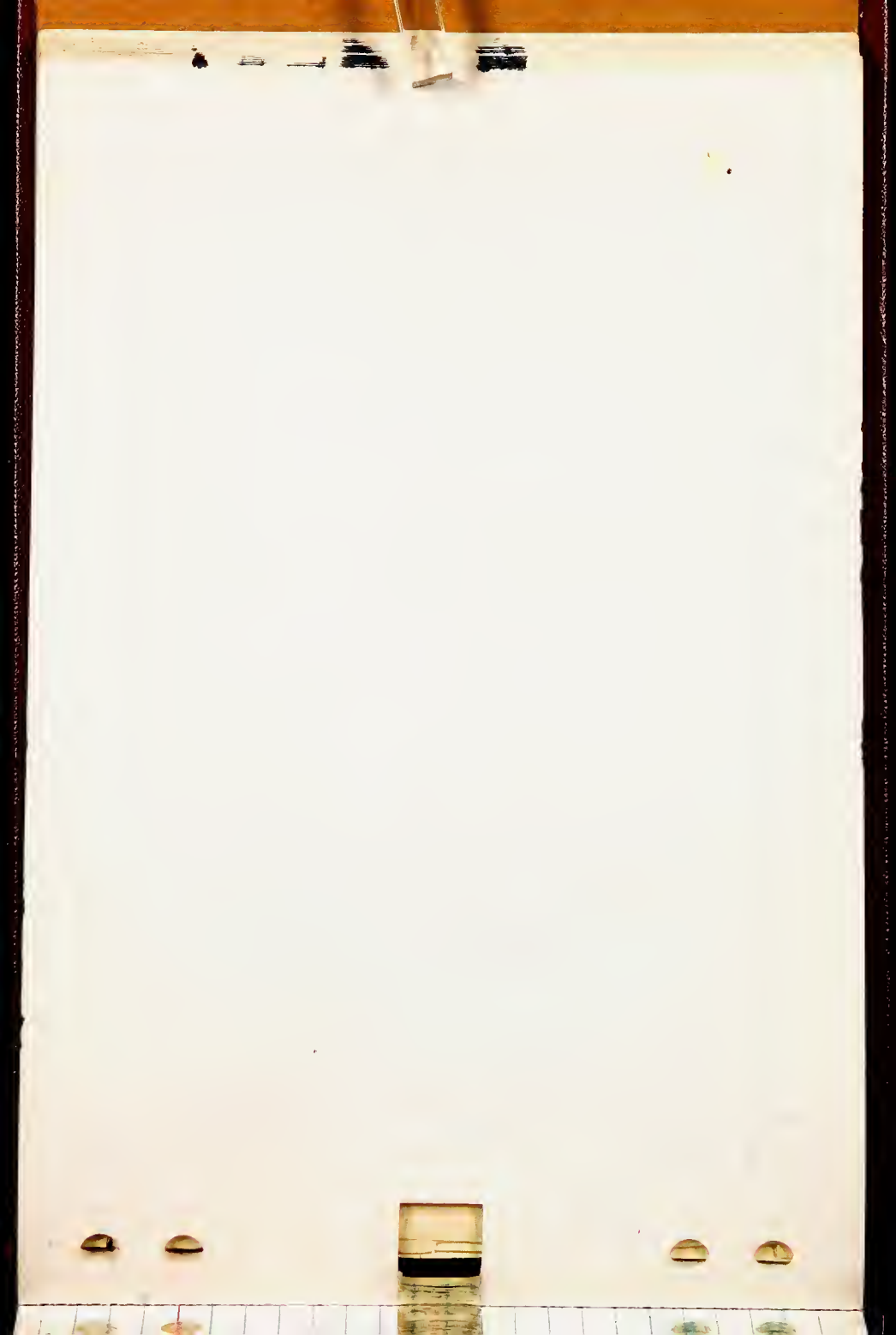
7/11/78

7814 Center NW NW Sec 1, T. 20 N R 35 E
GARFIELD Co., MONT. Hells Hollow Q.

Trace [illegible]
= COAL

WITHIN 3 m.
of COAL
Bill's #~~V-29438~~
Hell Creek Fm. Gumbos

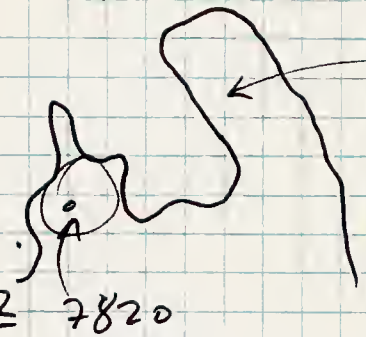
1070-B



7/11/78

7820 Tullock - Hell Creek Fms.

TULLOCK brown SLTST. & SS. w lg & some pl rags



SW 1/4, NW 1/4, NE 1/4 Sec 1, T20N R 35E., GARFIELD CO., MONT.

7/11/78

7521

N Center, N 1/2, NE 1/4 Sec 1, T 20N, R 35E

Pollen Sample will be

~~Pollen Sample~~

1079-B

7121 b Cercidiphyllum ellipticum

? Dryophyllum sp. ?

7/12/78

CENTER NW 1/4, NW 1/4, Sec 19
T20N, R37E. Garfield Co
MONT.

1079-B

7/13/78

NW 1/4, NE 1/4 Sec. 15, T 15 N, R 55 E
DAWSON Co., Mont

1079-B

July 13, 1978

CAINS COULEE, SW 1/4, SW 1/4, NW 1/4
SEC. 7, T. 15N, R 56 E, DAWSON CO., MONT.

Probably best to consider the basal sombre portion of the F.V. here in the Glendive area as LUDLOW & NOT distinguish TULLOCK + LEBO.

7/13/28

7836 HUNGRY JOE, NORTH ~~MOSE~~ PROMONTORY
T 15 N, R 55 E
1/2 mi E. of Glendive, DAWSON Co. MONT.

W. flank of Cedar Creek Anticline. SW1/4, NE1/4, NE1/4 Sec. 9, T 13 N, R 55 E. Dawson Co.

Hoyt Quad

1929-A

7/14/78

SE 1/4 Sec 19 W 1/2 SW 1/4 Sec 20
T 14N, R 55 E, 12 mi SW of
Glendive MONTANA on S BANK
of Yellow STONE River.

Hell Creek SAme brownish light grey
obscurely bedded silt
at upper CONTACT as
IN Glendive
~~No~~ Gumpos no lgs. but lim.
INTERVALS

Tullock Tannish brown
& grey lignite w/ siderite
better STRATIFIED.

Somber leo, Dark brownish
grey w/ GRANULAR
brownish red LIMONITE
CONCS.

7/14/78

On Iron Bluff starting at N.C. Conc.

Base of F.V. marked by Lignite

Lowest 100' of Fm. Somber Strat. Thin Lignites & Sid. Concs.

50-70' Top of Bluff formed by Yellow Sand, Tullock.

200' Gray Clay + Brownish Sand Rock Strata w/ Concr. Limon Concs

"Big party?"

Tullock

Tongue River Lemon Yellow

To west of Bluff & Above Somber No Good-fossil PLANTS found.

7824

7/17/78

C, SW 1/4, SW 1/4, Sec 1, T 57 N, R 100 W
PARK CO., WYO.
ELK BASIN NW, QUAD

LAKE BEDS CAPPING A CUESTA
MARLS & Fr. WATER LS. beds
W THIN II SANDS. Sometimes
PINK MARLS
LAKE BEDS
NO PLANTS Some ROOT
MOULDS esp. in Fr. WATER LS.

ONE PIECE OF FLOAT W
METASEQUOIA
+ DIV leaf twigs.

7/17/73

7830 C, NE 1/4, Sec 2, T 57 N, R 100 W,
PARK Co., WY.
ELK BASIN QUAD

V

LAKE BEDS
FR. WATER Ls. CAPPING
BLUFFS.

7831 Center E bdy NW ¼, NW ¼ Sec 30
T 50 N, R 100 W 6th PARK Co, WYO
FLK BASIN NW

Hills & W facing exposures W of Road
LAKE BEDS
Chipp x Shales
Marls
SS IN lenses
Fr. Water Is

[redacted] 7/19/78

7832

App C, e bly Sec 5 T 55N, R 101W
Park Co, Wyo
Willwood Fm

Celtis Seeds
Mollusc's & Invert Tooth.

30' above 2nd prominent ss
which forms a FLAT Terrace
at top of First cliff

Slopes To South
of Phil Gl. Creek Camp.

ECTOCION TOOTH

7/17/78

7833 Road Side just east
NW 1/4 Sec 35 T 59 R 101 W

Clark Quad — Wyo Bank Co.

Fluvial ? Ark Ft. Union
some lgys. Finely ss.
no fossil lvs.

Shell frags.

7/19/78

7834 Center S. line NE¼, Sec. 22
T 57N R 101 W, PARK Co, WYO.
A Lignite overlain by a shale
Shales dominated by
METASEQUOIA rimanus
Also
CARYA

Shales

This loc. is Mich. 216
Basal CLARK FORMATION based
on Vertebrate remains
Phil Gingerich

Persites argutus
Glyptostrobus europaeus
Ampelopsis cercifolia
metasequoia Cones
Populus verrucosa
Nyssa ?
Zelkova
Viburnum Copanoides
Cornus nebrascensis
Corylus Sp.
Platanus reynoldsii

7/19/78

Also revisited 3637 w/ Erling.

More leaves could be taken from site found 2 Diamans brownii type.

7/20/78

7835 app. Center S. bdy NW1/4 NE1/4
Sec 9, T. 56N, R. 99W, PARK Co
mtn ELK BASIN SE Quad.

Lignitic interval in fluvial sequence.

~~Lignitic~~
Sil. x Shales above lign
lvl ~~plant~~ fossil plant remains

Good Ultimate Vew. but
Shales fracture.

Cercidiphyllum fruit
Cercidiphyllum leaf
Fagus Dianianus
Ampelopsis ?
Corylus.

Elwyn Dok a Torrejon
mmals out of Colo
Creek

General Color of Lithology in
Unit is as Shown. Am
Soils a bit like The Repo

7/20/78
Colo.

7836 (C. E bdy. SE1/4, SE1/4, NE1/4, NW1/4 Sec 7.), T56N, R99W, Park Co., Wyo. ELK BASIN SE Quad.

F.U. 1 in. Yellow TAN FLUVIAL FACIES a Second Carb. layer about 80' (Strat.) above the one where leaves were first encountered

Metasequoia Very Common

Silver Coulee Beds of Jepsen 1940

7837

Center S bdy, SE1/4, NW1/4, NE1/4, NW1/4, Sec 9, T 56 N, R 99 W. Park Co

Claystone beneath ss ledge

Fossil loc. marker 131

METASEQUOIA

Angiosperms ss. Amyg. ppl.

20' above at base of

ss shimmery

is a waxy shale

inch immediately below

ss

Near the top of a long slope beneath a ss forming the top of the slope.

Mammal Stratigraphy From Phil. Sargent 7/20/31

Uintah

No large Rhinocerotoids

(← Bobcat Red beds)

× Plio. cf. Tricuspidatus

× (Princeton Quarry)

× (Airport 7133)

Jeffersonian

× (Rockbench)

Torrejonian

Puercan

× (Manitou)

Cret.

[redacted]

3/22/78

7838 MANTUA QUARRY OF JEPSEN

App. Center W bdy. NE1/4, SW1/4, Sec 31, T 57N, R 98W, Park Co., Wyo. overlooking Little Pole Cat Oil Field.

Somber lebo beds W of air port Road x above Thin but one side of pole cat Bench Great yellow ~~ss~~ indurated ss channels occur in the interval partially masking it.

Lebo same basic Zone x dark grey gumbo look as W of ELK BASIN but spongy reddish brown limonite Concs not present.

Fossil ms in a 5 ft sect x ss of Fantail 0.9 to 1.3 m above base of Lentil Lentil Cuts to Top of Fish Coal

Vertebrates from clay clast Conglomerates

0.4 - 0.8 m above base of lentil

64' below Top of Hill

Lentil abt 30 m thick steps back up slope hill above quarry

Dearborn Res. Quad.

A. Powell, Dixie FLAKY BRICK

Cercidiphyllum ~~CORDATUM~~ sp. elliptica
PLATANUS reynoldsii
Cone of Conifer.
"Rhamnus" cleburnii 2 esq.
"Viburnum" marginatum 2 esq.
Pterospermites cordatus-wkrd ?
Indet. of Cercidiphyllum complex.
Ampelopsis acerifolia (Newberry) Brown
Platanus reynoldsii

7/22/78

7839 Next point N.W. from MANTUA Quarry Site

90 m.w. of 7838

C w Bdy, NE1/4, NE1/4, NW1/4, SW1/4, Sec 31, T 57N, R 98W, Park Co.) Wyo

Shales interbedded with coals at base of MANTUA (entire)

Plants prob. Knapp

DEAVER RESERVOIR QUAD.

=8210 + 8323

WCS 7 My 16 c 7840 (which sec.)

Aucyrhaltes ?
Inuckta ?
Plagnus ?
Subfamily ?
Cunoniaceae
Glyptostrobus
Eq viscrum magnum type

poss Dinotherapsis ISOMC use
Diatanus ?

[illegible]

365 Salvinia

Salvinia pneauriculata

7/23/78

Hanley BH7-78

7840 Bhignitic shale below a ss capping hill just east of Nile Orchard Beach Quad.
FLYING ANT HILL

GLYPTOSTROBUS
Zingiberopsis ISONER.
Abernhortes affinis
LAMANONIA ?
STAG Horn Fern

in a ~~[illegible]~~ lignitic marl
grey shale 4ft
3' thick.

Field Camp. Near C., S bdy, SE 1/4, NE 1/4, NE 1/4, Sec 29, T50N, R93W, Big Horn Co, Wyo. Orchard Beach Quad.

W Scott Wing, David Schenck-Hamlin, Dixie Hamblock, Arnold Powell through 7/23/78

7841 N Slope of Coulee running W into S. Fork of ELK Creek, C, E bdy, NE1/4, SE1/4, NE1/4, NE1/4 Sec 29, T 50 N, R 93 W, Hill Hom Co, N.D.

Crenothrix

Glyptostrobus

Salvinia

Zingiberopsis isonervosa
Poss. Celtis scal.
Orchard Bench Quad.

Typhales

poss Lemnomia.

7/24/78

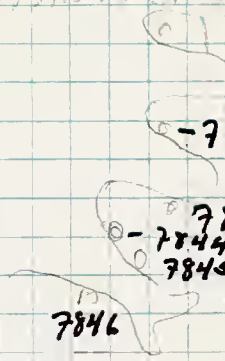
7842

Center SW1/4, NE1/4, NE1/4, SW1/4
Sec 34, T 50N, R 94W, Big Horn
County, Wyo.

Jones Reservoir Quad.

Lignitic shale e side
of Coulee

Ginkgo Lvs & Fruit
Litsea
Comptonia
Cercidiphyllum
Platanus Sassafras



Lignitic shale e SITST.
w/ plants & mollosks.

w Scott Wing, David Schenckler
John Hanley, Emmit Evanoff,
Robert O'Donell, Steve
Dixie Hambrick, Arnold Powell.
Through 7/24/78

1078-B

Loc. same as D64z

7843 West side of Coulee
Same as Lignitic Shale
Loc. same as 7842
Same elevation.

More open S

Salinia
Sphaerium pearl
more mollusks

E-0501

John Hawkes No.

7844 28-BH36 John Hankey No.

East Side of next coulee
to West. of 7844

Ginkgo
Platycarya
Platanus nobilis
Platanus w/ large glandular
teeth
Equisetum sp

[illegible]

Bed a silty lignitic
shale [illegible]
w/ some [illegible]
[illegible] ss [illegible]
[illegible]
lignitic ss w poor
leaf scraps grades
into non carb bed.

Hyracotherium
& Corypodon

E-691

201 South of 3644.

7845 20' SOUTH of 7844.

Grey CLAYST. beneath Sandy
Lignitic brown bed
with some well impressed
leaf forms.

PLATANUS
NUT
GINKGO seed.
Equisetum.

SITST. & Lig. Ss.
high CARB CONTENT.
CLASTICS SWAMPING
ORGANIC.

E-Dell

7846

opposite side of Coulee from 7844.

Limit of Carb plants bearing layer

Lignitic ss. w very poor pl. frags.
Brown color.

E-0501

7/25/78

7847 FORT UNION Fm. Below fault
CONTACT w/ Willwood W. of
BASIN

FORT UNION Carb Sh. #1
of SCOTT WING.
SW 1/4, SE 1/4, SE 1/4, SW 1/4, Sec 29,
T 51 N, R 93 W Big Horn Co. Wyo.
S. Side of Antelope Cr.
Metasequoia Occidentalis
Taxodium
Cryptomeroid

Cornus cf C. hyperborea
to Nebrascensis
Viburnum cupanoides
Glyptostrobus Cone Scale
Cercidiphyllum sp.

SILTSTONE above Clay w/
leaves BUT worm
Trails.

Orchard Bench 7/2

w/ SCOTT WING, DIXIE HAMBRICK,
ARNOLD POWELL all 7/25/78

E-0501

7/25/78

1978 Oil Coal Keogh ...

[redacted]

Some pls.

N1/2, SW1/4, NE1/4, SE1/4, Sec 29
T51N, R93W, Big Horn Co, Wyo.
at Sharp C. bend of Creek
on S. BANK.

Orchard Bench 7½'

1070-B

TRAVERSE from fault Thru
Willwood Fm. (Basal Graybull Sd)
N½, NW¼, Sec. 32, T 51 N, R 93 W.

CARB ZONE

WCS-1 — 100 m below

1070-B

7/25/58

7849 Contd.

WCS-6

Planning model for the
Liquidoid type form

Equilibrium

WCS-5 Metabolism

Inhibitory Psychosis
Schizophrenia
Neurosis

1070-A

7126/74

785 880-960 m E, 0 m N. of SW Cor. sec 34, T 51N, R 96W, Big Horn Co. Wyo. Sheep Mtn. Quad.

leaf
prequriculata

W/ Scozz Wing, D. Schramkler, D. Hambrick, A. Powell.

E-6501

7/26/28

7851 770 m E & 900 m S, NW Bdy, Sec 35, T 49N, R 99W, Big Horn Co, Wyo. In Badlands of Wildcat Ridge

Carb Shales (Brown) Paper

Abt 2½ - 4' Brick

Magna Kn H.

Lygodium kaulfussi aff. borealis or Populus cfr wyom.

Lygodroid Fern Axem in Carb Shale

All of 7/26 w/ Scott Wing, David Schemerhorn
Dixie Hambrick, Arnold Powell
DUTCH NICK FLAT NW 7½'

1070 - B

7851 770 M, E x 650 M S of NW Cor,
Sec 35, T 49N, R 97W. On Same
Spur if Wildcat Ridge as 7851
Upper Willow
On Wildcat Ridge

Cercidiphyllum or Populus wyum
Sandstone from Access Sec

Big Horn Co Wyo.
DUTCH NICK FLAT NW.

1070-B

7/27/78

78S 3 Same Carb Layer as at 78S0-41
260 m S & 5 m W of NE Cor, Sec 29
T 50 N, R 93 W. Big Horn Co, Wyo.
1 Coulee N. from 78-41
on S. side.

Collected 1 Specimen only
from fissile siltstone unit

Collected at 78111

Willwood Fm.

E-6501

[redacted] 7/28/78

Field Trip w/ Phil Gingerich

Phil estimates
2000 m Sec.

Bdy

Would draw Paleocene - Eocene
bdy 1/3 of way up in Clarkf

1079-B

7/28/78

E-6501

7/28/78

1079-B

7854 Belfry Road Cut

improperly numbered
7852

7854 b base of post bark
Platanus Nobilis
Cercidiphyllum lvs + fruits

7 Aug. 1978 Silver Tip Coulee

Hot & Dry

Locs. 78bL
Porosia verrucosa
Heliosara
Glyptostobus
Platanus neglecta

Leg. Dixie, Arnie Beaumont
section from base of Silver Tip.

8 Aug 1978 Tues
Silver Tip Coulee Section

9 Aug. Wed.
Silver Tip Coulee Section
~~finished~~

10 Aug. Thurs
Silver Tip Coulee Section
finished

11 Aug. Friday

Collection at locality in
Elk Basin
Hickey 7659a

My Number 7868

12 Aug. Saturday

Tuttle Quarry at
Scorpion Hollow in
Elk Basin

13 Aug. Sunday

Went to Powell, Wyo.
collection at Grimy Gulch
RAINED OUT

14 Aug. Monday & 15 Aug Tuesday

Collection in Grimy Gulch
Collected by Hickey in 1978
My locality 7869
Prolific, but worked out
little known Mfg. there

16 Aug. Wednesday
Went to Ramsey Junction in Laurel Mt. to buy lunch for boys.

Annie & Dixie collected plt. fossils at the lower locality 7870 at Silver Tip.

17 Aug Thursday

Collected at the Scott Wing locality in Badger Basin A827.

Camped near Line Creek

18 Aug. Friday
Collected at the Scott Wing site again. Worked the site out. mostly Metasequoia Branches,

good Metasequoia cones

Camped at Line Creek

19 Aug. Saturday

Collected at Badgubaan
Locality (Hicky 7627)

Upper locality 7872

Lower locality 7873

Collected at Stantip

Dixie locality 7866

A few specimens from a
salt stone 30' above 7866
just below massive
ledge forming sandstone -
- given loc. number 7874
Corcidyphyllum and possible
Platonus

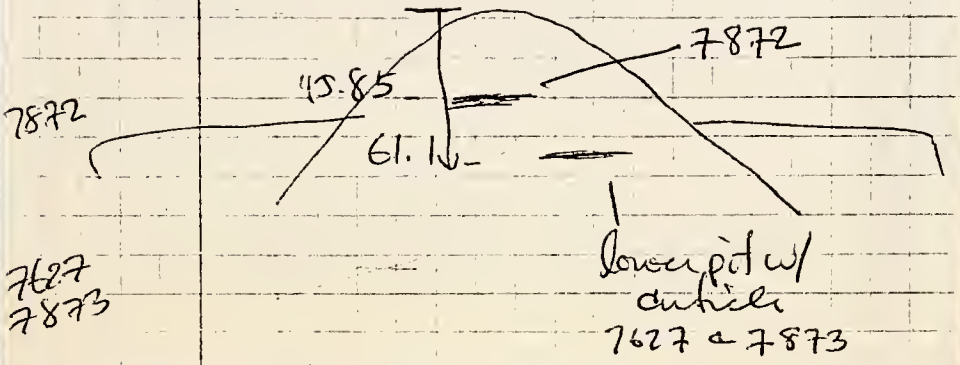
located another locality
approx. 100 yds South of
loc. 7866 and stratigraphically

20 ft. higher than 7866 in
fossil shale - given loc. #
7875 -

Contains much Meliosma.

7872, 7873

Early Clarkforkian - Badger Basin
marginal deep digging
possibly U. Tiffanian



7627
7873

Clark Quad
Sec. 7, Twn. 57N R101W

7871
7834 Big Sand Coulee
Scott Wing Locality

L. Clark Location
Sec. 22 T 57N R 101W
Clark Quad

Vertebrate Site Plant Gingkoid
(Michigan)

Elk Basin SE Quad
7835 mid Tiffanian on Airport Road
7837 7835 & 7837

EARLAND QUAD
7861 Quinn Gulch
7861 - 50 m above base of
Paleocene

7838 Montchua - earliest
Paleocene Vertebrate Collection
= N. Am.

7839 Lateral to Montchua Quarry
Deacon Reason

Rock Bench Quarry
Pole Cat Bench

Debeya locality 765DA

Sec 1 T57N R100W
Elk Basin Quad

WASATCHIAN

SPARNACIAN — CLARKFORKIAN — Bad Bear Creek

THANETIAN — TIFFANIAN

Pole MONTIAN — TORRESONIAN — ← Cerro Colorado

DRAGONIAN — ← Economic Center

DANIAN — PUERCIAN — ← Delaney Tullock

MAESTR.

CAMP.

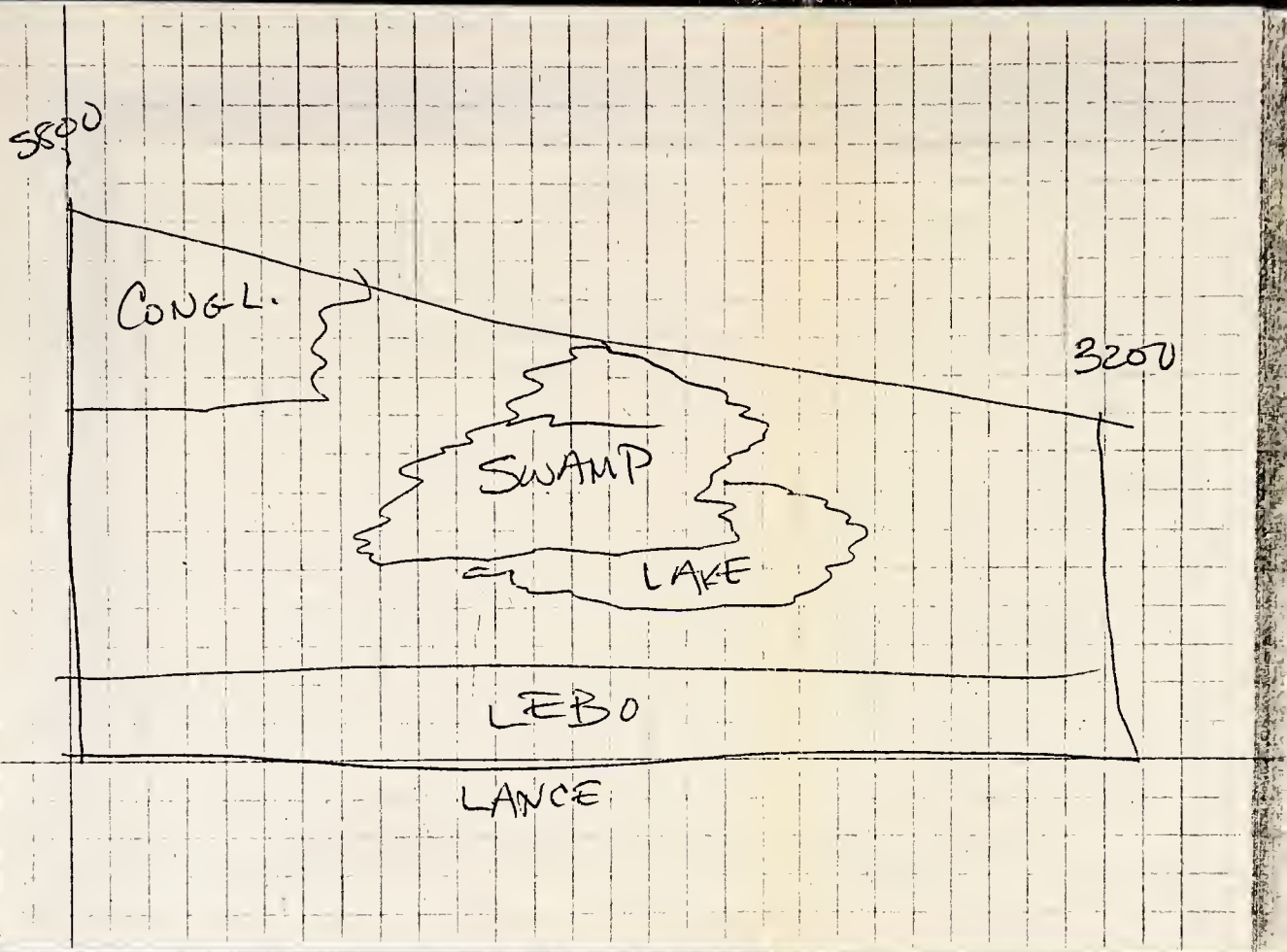
SAN T.

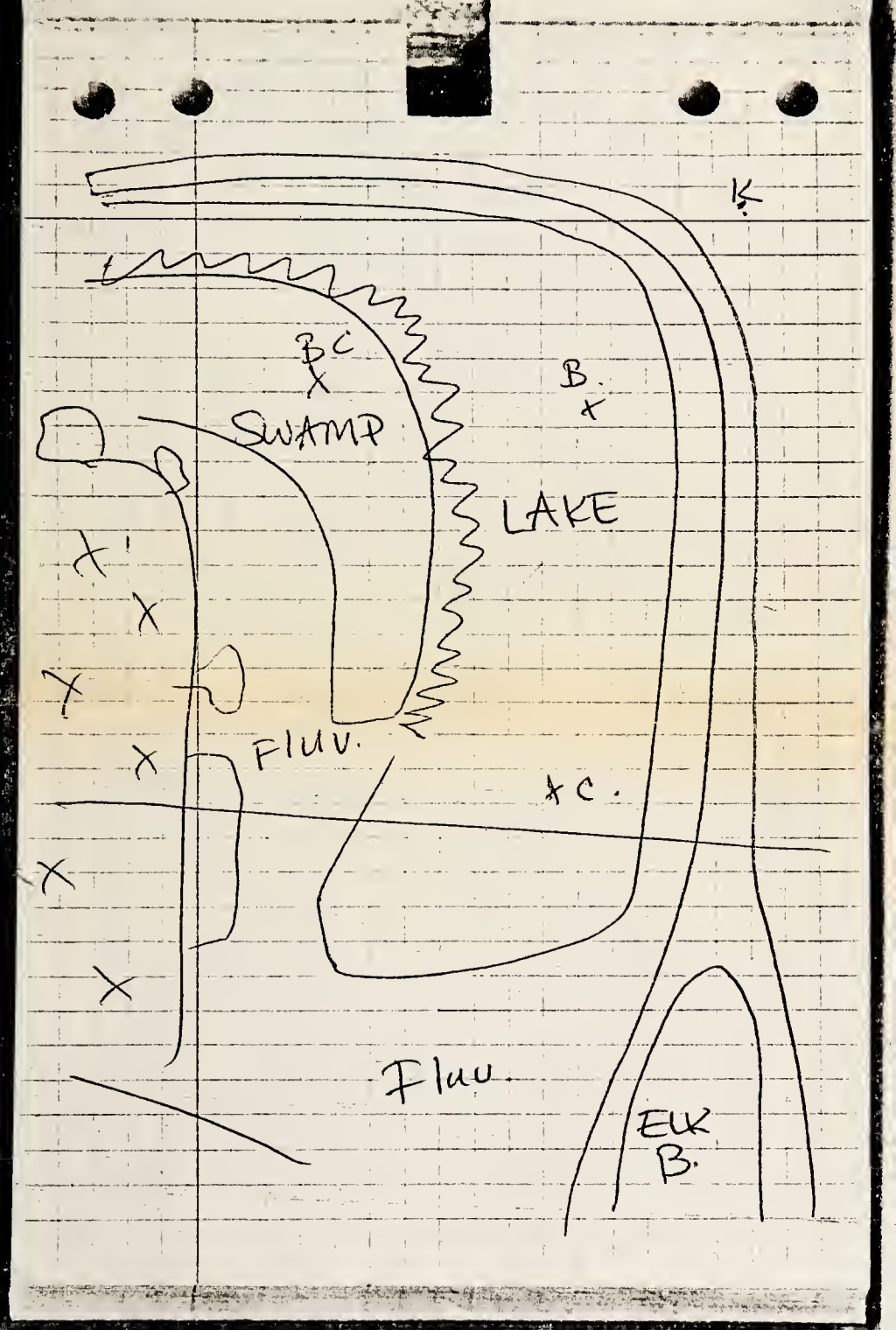
CONIAC.

TUR.

CENO.

SENONIAN


5800
CONGL.
3200
SWAMP
LAKE
LEBO
LANCE


K.
BC
SWAMP
B.
LAKE
FLUV.
TC.
Fluv.
ELK
B.

1078-B

9/1/78

7855 Fort Union Fm., Fluvial Sequence below Bed of shales in dispute
In Sec. 25, 2010 m N & 680 m W of SE Cor. T 8 S, R 22 E, Carbon Co., Mont.

Cercidiphyllum sp.
Melosma flexuosa
Carya or Pterocarya

R. Hamblock, A. Burk, E. Evanoff, John Hanley, S. Udd, E. Dondé

1078-B

7156 PLANTS from the SAND BUTTE 35 mi of the LANEY Fork of the Green River Fm

Lygodium Kaulfussi
PLATANUS wisliceni

1079-B

[redacted] 9/2 Cold x Part. y Cl.

7857 Center N½ sec 20, T 95 R 23E, Carbon Co., Wyo. on N side of ELK BASIN

N Side ELK BASIN.
Sombre Lebo Mbr" above the 55 ledges of the Lance Fm.

Ledges of Iron ST. Dirty, Rusty SS in lowest Lebo hold up a weak escarpment outside that of the higher Lance SS

Clay Fe stone Concs with some leaf frags

Large PLATANOID Frags
Possible Cercidiphyllum frag

PLATANUS nobilis frags in a ferruginous SS. Lens

A. Powell + D. HAMBRICK

1079-B

7857

Platanus reynoldsii
Ficus planicostata Lesq

9/2/78

S 1/2 Sec 16 & SW 17

Long Draw 7½

INCREASING NO OF SS IN ZONE IN ZONE between 4575 x 4600' CONTOURS. TOWARD EAST SS IS YELLOW & SLIGHTLY GRAY

ZONE IS TAN HERE AND HAS LOCAL THICK SS CHANNELS running for 1/4 to 1/2 mile.

1979-B

9/2/24

9/2/78

Center Sec 22

FU SS#1 SS Channel in center of Sec.
Channel TAN SS w
ferruginous clay 30' thick
in center of hill
Supports pines.

2 cbo becoming ~~eliminated~~ prevailed by ~~smaller~~ SS channels

1079-B

7/2/38

9/2/78

7858 ~~1400 M~~

1H SW Sec 23 1400 M S & 180-200 M E of NW Cor. sec. 23 T9S, R23 E

JUST Above 2ANCE CONTACT 2nd Lignites (Thin) appears

TP
Section JUST Above SS (2ance) is grey SLTST.

Thick: 1'12' Lignite abt 40' above contact.

CARBON Co. MONT.

1079-B

Below Serendipity Summit
14 Sec. 25 T 6

Rec Earned Possible SS
Lic at base of
Section is Lance.

Lehe TAN w/ Lyn x
Channel SS.

Lance - Meter/sec SAS
w ~~what~~ 17 Jrcx
Lic Lic Lic

1078-B

9/2/78
Cold + Windy

7851 Sec 23, 290m N + 355m W of SE Cor., T9S, R23E, Carbon Co, Utah

REAVES in Cany Fe. Strike
→ Conc layer in a
SS. outcropping to Roof
Cut.

Found a probable Eucommia seed
Cercidiphyllum.

10759-B

7859.

Cercidiphyllum sp.

9/2/78

7860

Top of small Hill, 220-240 m N of SE Cor. Sec. 23, T9S, R23E
Serendipity summit again

Find old collection no

Have now mapped base at Ft. Union at Top of pine Covered ss ledge at base of Carbon Co. Mont.

Section Runs Through here.

Old No. 72128
Find the section

1978-B

SERENDIPITY SUMMIT

EUCOMMIA serrata
Cercidiphyllum SP
Laurophyllum or Palm. Dillinid Leaf
or CINNAMOMUM SEZANNENSE
Carya ANTIQUORUM

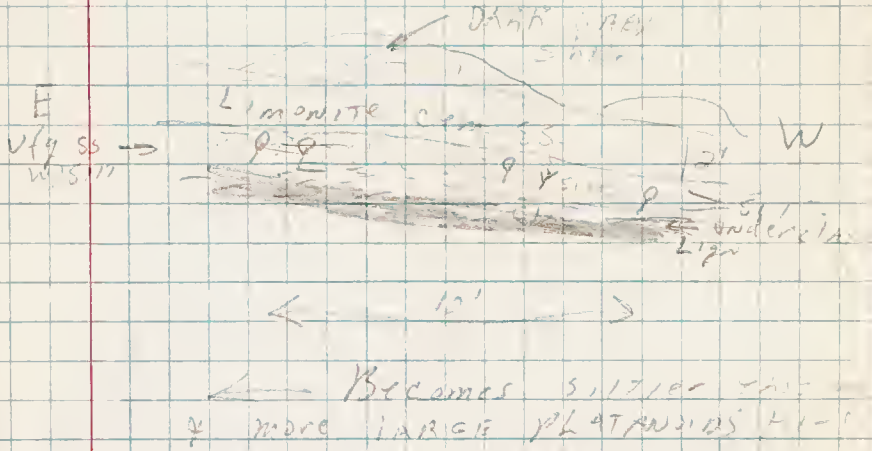
9/3/78

7861 ☐ BIMY GULCH

≈8322

ON PUR 580 m e of SE Cor. sec 31 T 57N, R 98W, PARK Co. WYO

IN A SILTY TO SANDY bed overlying a lignite occurs in an EXTENSIVE ~~zone~~ CARBONACEOUS zone in SOMEWHAT LESS beds.



PLATANUS reynoldsii

Elev. above base of 1st Lign. marking base of F.V. just below MANTUA LENTIL

49.01 m

1978-A

PLATANUS reynoldsii (elongate fan
CISSUS marginata
Onoclea hesperia Brown
Ampelopsis acerifolia
Glyptostrobus europaeus
Sparganium styxium
aff. ~~of~~ ~~Dryophyllum~~ subfalcatum
~~Magnolia borealis Brown~~
"Vitis" STANTONI
'Rhamnus" Cleburnii
~~METASEQUOIA CUNEATA~~
PLATANUS w/ Bell-like glands on teeth
~~Sequoia langsdorfii~~

9/4/78

7864

K-Tert CONTACT at Top of N facing ESCARPMENT NEAR SAGE A STA. ~~N/A~~ ~~1100~~ 1100 M E & ~~240~~ 240 M N of SW Cor. Sec. 31 T 57 N, R 98 W, PARK Co, Wyo.

STRIKE 102°, W 30°

AT Top of Band ON K-TERT CONTACT

BASE OF COAL above 1ST Lignite

0 m SECTION ARRIE

0 – Top of LANCE Lignite ON a dark grey under clay ~~on~~ on Top of Lance

0.23 m ~~23~~ GRY LIGNITIC SILTY sh w/ poor plant frags

0.60 m Medium Brownish grey sh.

0.95 m SS - MANTUA LENTIL Very low L X beds at base Becoming more massive upward at 110 cm

1.70 m TOP of SS Ledge

TRACED FAULT SS TO MANTUA QUARRY and SS at 75 cm

D. HAMBRICK - A. POWELL.

1078-A

786 = cont'd

Is the continuation of the Mantua

Lignite at base was sampled in 1976 by Bob Tschudy (see Bates date). Lyn. 5175TS below are K

St Strike & Dip at fossil beds in Grimly Gulch
127° 129°; N8°

127
102
25

37
12
25°

1979 - A

9/4/78
GARLAND 7½'

7865 Mostly in S¼ Sec 31, T57N R98W
TRAVERSE from PARK Co, Wyo.
BASE of Lignite Below
MANTLA BENTO. MARKER
BED E.F.V.
TO Top Fossil PLANT
BED at GRIMY GULCH
Loc 7861
AZ. OF LINE OF TRAVERSE
25°

0 TO 1

0 LIES AT BASE of 6" Lignite just below MANTLA BENTO. 1' below

0 - 1 1.6 M
+1.2 M
3.8 M

1 IS 3.8 M Above 0

1 - 2 14 HI
+ 3.3 M
+ 3 HI

2 - 1 150 M at -13½°
23.77 at (-) 3.75

2 - B 1 HI - 43 cm
Height 3 = elev 2 + (1 HI = 43 cm)

1978 - B

9/4/78

(3) - (2) TAPE:
150 m at (−) 3.5°
33.27 at + 1.5°

(3) - (4) 150 m at (−) 4°
+ 150 m at (−) 3.5°
+ 150 m at (−) 3.5°
+ 150 m at (−) 0.75°
+ 42.5 m at + 2.5°

(4) - (3) Level Elev. 3
Elev 3 = Elev (4) + (5 HI − 0.49 m)

(4) - (5) 5 is at base of fossil SS.
TAPE
23.1 at (−) 8.5°

(5) - (4) elev 4 = elev 5 + (5 HI + 0.3 m)

Elev. Grimy Gulch Fossil Site above K-Tert bdy lig w.
~~1000.00~~ M
49.01
7862

See comp sheets

1978 - A

7/5/78

~~Coby~~ 15'

CLARK 15'

John Hawley

BH 33, 34 - 78

Sec 15 650 M E & 360 m N of SE Cor. of Sec. 15, T 56 N, R. 101 W, PARK Co., WYO

Molluscs from Cloverly Formation weathering out of limestones - w ~~red~~ brown to white [illegible] crust.

2 levels in this small hill.

1978 - B

3/5/78
CLAMM 151

7/5/78
CLARK 15'

7863

Sec 15 950 m E & 600 m N of SW Cor Sec. 15, T. 56 N, R 101 W, PARK Co, Wyo.

[illegible] limestone layers in a med grey silty shale. Ls contain mollusks. Silt is massive & calcareous [illegible] fine grained [illegible] structures.

[illegible] Ls [illegible] hydrobia & [illegible] [illegible] [illegible]

[illegible] Believe [illegible] [illegible] [illegible]

Calcium carbonate [illegible] in a tan subsoil. Silt also is a soil w/ calc. carb nodules. Mollucs occur in the silt as well as in the Ls.

Soil contains [illegible] silt but great [illegible] small peds [illegible] a loam [illegible]

[illegible] from [illegible] overlying [illegible] silt [illegible] to [illegible] [illegible] [illegible]

1978 - B

21/5/78
Cody 15'

7/5/78
Cody 15'

7864 Center S1/2 Sec 28, T 55N, R 101 W
HACKBERRY Hollow

Lower Middle Greybull
acc To Tom Bound

Celtis Seeds occurring in
Grey SITST. W/ molluscs
& Verts.

1978 - B

7/7/79

7866 - Reshooting The Silvertip Section

~~From Center SE 1/4 To SW 1/4 Sec 25~~

From Center SE 1/4 Sec. 25 To Silver Tip @ NW SW 1/4 Sec 25, T 8 S, R 22 E, Carbon Co., Mont. w/ A. Powell, D. Hambrick, J. McClammer

Abney Base SS is first SS encountered ... Diptron Base of Coal ... Form or Coal ... center of Sec

METERS

0 Line a 2170' above base

Base of A SS E R. (9)

vfg, Sr. 5Y7/2

v Limonite STAINING, Sl. micaceous

Base low ∠ through x-beds

w some marked by Carbonaceous matter

SS at 0 m of 7682

Wh color 0-

5Y7/2

base low ∠ x-beds some ripple marked

Vfg, trought xbeds throughout

Basal cont. covered.

Above 1 Er. (1)

(2)

3.8 Clay St, Lignitic, 5YR 3/1

w/ limon + Jarositic

grading up ward at 4.3 m to

Chipp. silty Shale 5Y6/2

w some pl remains,

wh color at 5 m 5Y 5/2

4.54 m SS, Basal cont II (3)

base vfg, Sf, clayey through x-bed.

5Y 7/4

above 5.5 m becoming more massive

1978-B

Loc 7866 fossil loc.
Jims. assessment
Porosia verrucosa
Glyptostrobus
Lauraceous
Platanus
Meliosma longifolia

7866

12.1 | TX beds - Trough x bed

7.5 Convoluted to 9 m.
Subgrey wacke 8 m
vfg.

9 Becoming low L Trough x bedded
some CARB ZrASh on
B.P.

10.5 Shale, lignitic, ~~carbon~~ lignitic (2)
w. 0.1 m layer of Lignite
at 11 m.
Some pl. frag 10YR 4/2
JAROSITE bands

11.1 Shale Chippy 5YR5/2
12 m. CITY Sh. onhw. some
wh color some JS nod. (2)
13 SLTST Chippy 5Y7/2

13.7 SS, vfg, low L Trough beds, (6)
5Y7/2, CARbon on B.P.

14.8 Sh, SL SLTY, Poor pl (1)
Stem & lf frags, 10YR 6/2
16.25 becoming lignitic

16.3 SS, vfg, CALC, low L TX beds, (7)
5Y 7/2 Becoming
ess well ind above 16.7
17 Grading into SHALE,

1978-B

7866 Cont.

Chippy, SY 5/2

17.3 Covered offset to next ravine to S. Line b

17 STAIN I at 5Y 7/2 SITST (3) RUSTY STAINED bedded SITST w leaves cercidiphyllum

17.2 Shale, very silty, chippy (1) 5Y 5/2

18.6 SS, vfg, 5Y 7/2, CALC. (2) low 20° Xbeds, base ll

19. Ledge of ll bedded, mid. SITST

19.5 SS as below (18.6) (6)

19.9 SITST ll bedding (3) 5Y 6/2

20 SITST becomes chippy (5)

21 LS, Fe water, SILTY, lo YR 6/6 weathering into concrey masses on slope

21.35 SS, vfg, lo YR 7/4 (7) top & bottom ll CALC., MASSIVE, Fe STAIN

1979 - B

9866.

22.05 S 17 ST (3)

Chippy 5 YR 7/2

Wh Color of Slope 5 Y 7/2

24.8 SS, Vfg, ~~Fe~~, 5Y7/2 (5)
Forming a weak ledge
Grading upward past
25.3 into a 5Y6/2
@ S 17 ST. w some Fe
STAINING
to 26.0m.

→ Offset to next BAUINE to North Line C

26 SS, base covered Low L (8)-(10)
Fr. x-beds, Vfg, SA, CAlc
5Y7/2 SS
27-28 (6) Softer Vfg
interval w/ plant
markings.
29 Contorted bedding (9)
Vfg
31.2 - Still contorted more
Fe St. Vfg. CAlc.
5Y7/2
31.7 Low L Irreg x-beds (10)
32.5 Contorted again.
~~32.6~~ As at 31.7 Really contorted
much of interval 31.2 - 40 wh
10YR 7/6

32.55 TO TOP OF [illegible]

1978 - B

7816

38 SS. Contorted (7)
wet friable fg 5Y8/1
non calc.

40 Very friable SS (3)

40.3 S1TST, Chippy w pl. (2)
roots + stems. 5Y6/2
some Limonite ST.

41.15 Lignitic shale 5Y7Y, Chippy
5Y/8 5/1

41.3 Chippy shale or clayst. 5Y5/2
some plant stem or root
frags. 10YR/7/4

41.8 S1TST. (2)
42.1 Clayst. becomes silty upward (2)
& marked w plant
stem or root frags.
42.4 Lignitic sh. (1)
42.6 Lignitic
42.7 Shale, chippy some limonite (2)
10YR 6/2
44.1 Lignite Black (1)
44.3 Shale chippy 5Y 5/2 (2)
45.1 mudST. 10YR 3/6
wh. color 40 - 50 5Y 7/2

1979-B

7866

45.4 Thin 1" to 2" intervals of (1)(2)(3)
Vfg, Fe st. ss, 11 contacts
in a chippy knoll st.
Cnc ss at 45.6
to 45.8

46 Chippy 5GY5/1 sh (1)
some plant stem
impressions Top 5Y5/1

47.1 ~~Sh~~ SLTST, limonitic (2)
10YR 7/4

48.1 Becomes a chippy (2)
mudst 5Y 6/2

48.65 SS, 10YR7/4, fow-T xbd (3)
f.g. calc. form. ?
Fe? mn. nodules throughout
Chitons & shells
Lenticular

49.25 Top SS.
Offset to next
bayne & line d

49.25 SLTST 5Y 7/2 (4)

50.1 Sh chippy, SL SLTY (5)
5Y 4/2

51 Becomes a Chippy V. SLTY
Sh or mudst

1978-B

7866

7/8/78

51.45 single ind bed of mic. (7)
SLTST
51.50 Sh, Chippy
Int 50-53m Brnc flat
fr water ls. conc
51.7 Becomes a SLTST. (2)
Chippy
52.2 Sh, Chippy, SLTY
52.6 ... fr. WATER ls conc. (6)
bed., Ferruginous, clayey
wh 7.5 10YR 6/6
53.3 SS, soft, punky, clayey (3)
forms slope 16 B 3/4
53.9 Chippy SLTST (2)
5Y 5/2
54.4 Becomes chippy Sh
~~54.7~~ S
54.9 SS as at 53.3 (3)
55. Becomes a Chippy SLTST. (2)
55.1 55. again
55.5. SLTST. Chippy 5Y 5/2 (2)
Becoming Shaley upward

1978-B

78 x 79 55 is the
Diye
. 7,4 m to facial Be

7866

56.2 SLTST. as below

56.4 SS. friable, vfg., as below. (2)

57.4 SLTST, Chippy SYR 1/2 (2)
becoming fine CLAYEY
UNWASHED MUDST. AT 57.2

58. Fr. WATER Is. conc. very
clayey 10YR 7/4

58.2 Lignitic Chippy CLAYST

58.5 SILTY Otherwise same.

59.5. Becomes chippy shale
5YR 4/1

59.8. SLTST, RUSTY wh
60.0 as at 59.5 AT bxsc- (2)
becoming ± Chippy
grey mudstone AT 60.3

60.8 SLTST. 10YR 7/4 Fe STAINED
Ledge former (4)

61.9 Becomes CLAYEY ±

62 Fissle, Chippy 5Y 4/1
Silty
Grades upward to...

63 ~~Grades~~ Fissle Lignitic
Shale 5YR 4/2

1979-B

7866

Wh. INTC VAL. 5Y 7/2

63.2 Chippy ~~SLT~~ mudst ⑦

63.75 SS, Leggy base Low ∠ T. x beds
CALC. 5Y 7/2
Upper 1/2 contorted bedding
base Sh. flow(?) ripples
64.75

63.5 Lignite

65. Grey Chippy mudst ②

65.25 SS, vfg Thick ③

65.5 SLTST. platey friable ④
5Y 6/2

67. ~~SLTST~~ Mudst, chippy ②
w plant root imps
5Y 5/2
Grading upward to mudst.
shale or Lignitic fissle
Sh. at 68

68.1 Lignite
68.2 Mudst, fissle 5Y 6/2

~~69~~ ~~70~~ ③

70. Fissle SLTY Sh 5Y 4/1
71.6 ~~70 Dark~~ Layer of vfg well
INT. SS, 5Y 7/2
CALC 58

1979-B

7866.

72.2 Chippy SLTST. ②
72.9 Ledge of Ferruginous wealth
Fr water ls. gray wh. col. 5Y7/2
73.3 Chippy SLTST 5Y 7/2 ②
crabbly upward to 5G 5/1

75.2 SS, ledge, trough x-bedd
Calc ①
75.8 Sh., chippy 5Y5/2 ②
76.9 SS, 5Y7/2 vfg trough
x bedded Leff Calc ⑥
77.2 SLTST, SS ③
interbeds abt 10 cm
thick
78.4 SS, ledge as at 76.9
78.5 soft friable vfg SS.

79. Top of Seq. 4
Shift to next spur
section.
* to new water level

1979-B

Things for me to do this summer

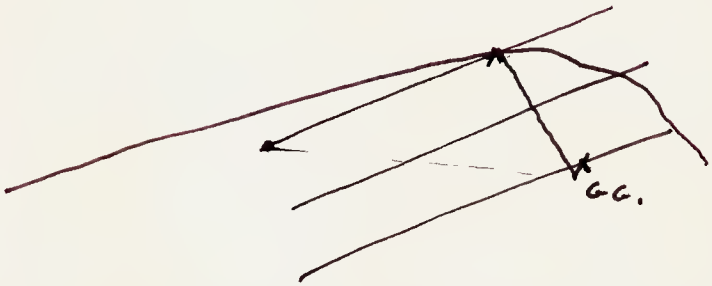
1. Supposed Karstification of the Central Basin
2. Level of Manitou limits
3. Rock Bend prospect around to locate Lebo and find relationship of it to rest of section in the P.C. Bench area.
4. Work old section on E. side of P.C. Bench.

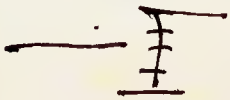
1978-B

Thurs for Jesse Mc J. do.

1. Large quarry at loc. 7834
   + Prospecting around Corner.
2. Prospecting in Airport Road section of Polecat Bench escarpment Tuffaceous
3. Ginkgo at Elk Basin Creek
   + Dubois
4. Lower Tatman Creek Zone on Tatman Mt.
   = Middle Eocene Beds.
5. Silver Tip Quarry at 7855

1978 - B





Z X d

Bkpt ① 7 8 8

7 8 1 0

7 8 1 4

7 8 1 3

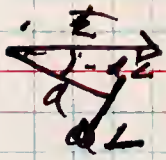
7 8 1 1

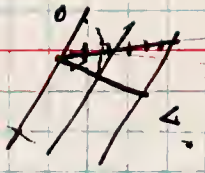
7 8 1 6

7 8 4

7 8 3

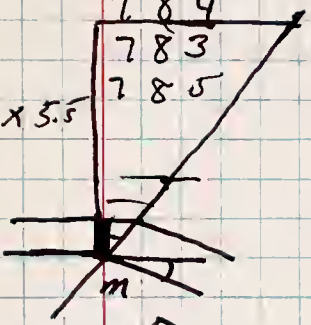
7 8 5

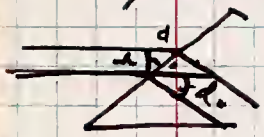


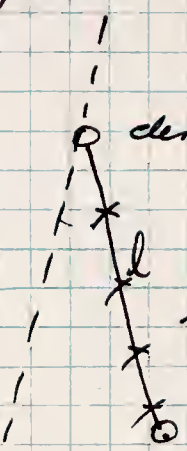


0 30° 20 28°

6 × 5.5





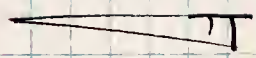


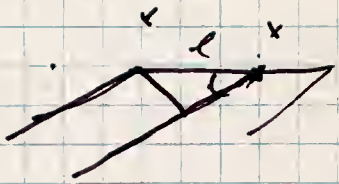
az. Tape —

hor. ∠ of Tape —

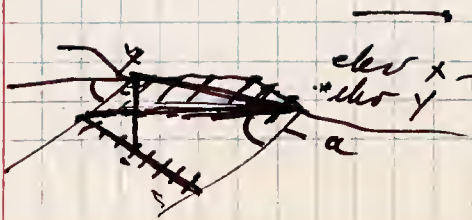
Stake

clip —





sin. ∠ × l = d.



clev x − clev y = (x − y)

Jim Fassett
FARMINGTON
USGS COAL GEOL.
for Ojo ALAMO
sa section W.
TAENIOLAEBIS IN BARREL SPRS.
PROB FLORAL ZONE 2.

Bruce Billings Trustee.

Hagemann fm.

R-Stbl

McCLAMMER LOCS.

7867 —

7868 - GINKGO SITE ~~NEA~~ W. of ELK BASIN

7869 - Prob. Grimy Gulch

7868 = 7659a Debey Site